REMARKS

Applicant certainly appreciates the allowance of claims 12-16 and the indication of allowance of claims 3-8 and 10 if rewritten in independent form including the requirements of the base claims and any intervening claims. Applicant has amended claim 1, however, in such a manner that it should be allowable, and claim 1 is the base claim for claims 3-9 and 10. Applicant has amended claim 9 to make it more definite and cancelled the non-elected claims. Applicant respectfully traverses the rejection of claims 1, 2 and 9 over the cited art and respectfully requests reconsideration.

Referring to Figure 2 for illustration, the rotorcraft of this invention has a rotor 31 that provides lift for take-off and landing. At high speed cruise flight, wings 23 provide substantially all of the lift and rotor 31 is unloaded. Rotor 31 will freewheel or autorotate due to air flowing through it. The propulsion source during forward flight comprises propeller 29 in this example. These features are known in the prior art on aircraft referred to as "gyroplanes".

In this invention mast 37 is tiltable relative to fuselage 21, and rotor 31 is tiltable relative to the mast. A cyclic control assembly causes the tilting of the rotor in fore and aft directions as well as side-to-side directions relative to the mast. This combination enables the pilot to achieve more desirable fuselage attitudes than in the prior art. The cyclic control assembly enables the rotor force vector to pass through the aircraft center of gravity at all degrees of mast tilt, as illustrated in Figures 8-14. For example, Figures 13 shows spindle 33 is tilted forward relative to mast 47 from the position shown in Figure 12 to a more inclined orientation while mast 47 remains at the same angle. It is desirable to be able to direct the rotor force vector through the aircraft center of gravity even when the rotor is substantially unloaded during forward flight.

In the embodiment shown, the cyclic control assembly includes a spindle 33 and control linkages 67. However, the invention is also applicable to a cyclic control assembly using a

swash plate, which is a conventional cyclic control assembly for helicopters that does not utilize a spindle or control linkages as shown.

Avery discloses an aircraft with a rotor 11 mounted to a mast that tilts the rotor from a horizontal orientation for take-off, landing and hovering to a vertical orientation for forward flight. Rotor 11 comprises the source of propulsion not only during take-off, landing and hovering, but also during horizontal flight, serving as a propeller. Avery teaches to tilt the mast in order to convert a rotor into a propeller for horizontal flight. Avery does not suggest tilting a mast of a gyroplane, where the rotor is substantially unloaded during forward flight. In Avery, when rotor 11 is providing the lift for the aircraft, its rotor force vector would be able to pass through the center of gravity of the aircraft. (col. 8, lines 69-73) However, because rotor 11 of Avery serves as the propulsion source during forward flight, its rotor force vector does not pass through the aircraft center of gravity during forward flight, rather it passes through the horizontal tail surfaces (col. 9, lines 3-6).

Claim 1 as amended requires a propulsion source for propelling the aircraft forward during forward flight and a rotor for providing lift during take-off and landings and for auto-rotating in a substantially unloaded condition during forward flight. In other words, claim 1 defines a gyroplane. There is no propulsion source in Avery, other than the rotor, which serves as the propulsion during forward flight. Avery's rotor does not auto-rotate during forward flight, rather it is driven. Applicant submits that it would not be obvious to provide a tilting mast to a gyroplane, as defined in claim 1, because of the different functions of the tilting mast in Avery's aircraft and in a gyroplane. Avery's mast tilts to convert the rotor from its helicopter functions to its propeller functions for propelling the aircraft in forward flight. Applicant's tilting mast enables a more desired fuselage attitude during all types of flight. One skilled in the art viewing Avery would not be led to use a tilting mast on a gyroplane because the rotor is not used as a propulsion source during forward flight in a gyroplane.

Claim 1 also requires a cyclic control assembly that selectively tilts the rotor relative to the tilting mast, the cyclic control assembly being selectively controllable so that a rotor force vector can pass through a center of gravity of the rotorcraft at all angles of tilt of the tilting mast. In Avery, during forward flight, the rotor force vector passes through the horizontal tail surfaces, not through the aircraft center of gravity. Avery does not disclose a cyclic control assembly that enables the rotor to be tilted relative to the mast to direct the rotor force vector through the aircraft center of gravity at all angles of mast tilt.

Sassi discloses angle of attack sensors for aircraft, but does not suggest anything concerning a tiltable mast for a gyroplane. Applicant respectfully submits that the claims are now in condition for allowance and respectfully requests reconsideration.

Respectfully submitted,

James E. Bradley
Reg. No. 27,536
Attorney for Applicants

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BRACEWELL & GIULIANI LLP
P. O. Box 61389
Houston, Texas 77208 1389
Tel.: (713) 221-3301
Fax: (713) 222-3287